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2,179, in the fall courses within the quadrangles, and a considerable loss, from 562 to 247, in the courses outside the quadrangles. Owing to the increase in the summer session figures, however, there is a gain in the grand total. The change of courses given for teachers from the center of the city to the quadrangles, which took effect this fall, has lessened the number of students in such courses, but increased the efficiency of the work.

As for individual schools, there has been a gain in the academic department, especially in men, in law and in pedagogy, while there has been a slight loss in medicine, divinity and the graduate schools. As in the case of the University of Pennsylvania, a number of students enrolled in courses for teachers have been included in the Chicago figures who would be excluded in the Columbia or Harvard figures, but the time for making more definite inquiries was too short.

The following errors should also be noted: In the list of institutions mentioned on page 794, column two, line eleven, Stanford should be inserted between Kansas and Indiana; and in line fifteen Chicago should be omitted. On page 796, column one, line eighteen, Chicago should be inserted before Harvard. In the table, the number of men in the academic department of Princeton University should be 758, instead of 755. On page 794, column one, line twenty, insert, before Missouri, 'Syracuse (48.71%).' Rudolf Tombo, Jr.

ALCOHOL FROM CACTI

To the Editor of Science: In a letter entitled 'Alcohol from Cacti,' which appeared in the *Scientific American* for December 15, the author referring to the results obtained with this plant by a California chemist, states that "from five pounds of pulp he distilled, in a crude way, more than a gallon of alcohol, which was clear in color, and burned readily with a bright, warm glow."

At the time this article appeared we were hesitating about publishing the enclosed press bulletin for fear the theoretical estimates therein given would exceed the amount which it would be possible to obtain in practise.

Cactus will not average over 10 per cent. carbohydrates, and if, as is usually estimated, this yields one half its weight of 95 per cent. alcohol, it is not clear how it would be possible to obtain one gallon of alcohol from less than 140 pounds of this plant. If, however, the chemist referred to above can distil one gallon (seven pounds) from five pounds of cactus pulp, it would be interesting to know what the strength of his product is, and whether or not it was done with the assistance of a magician's wand.

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THE PARTHENOGENESIS OF ENCYRTUS

At the time that my recent note on 'Polyembryony and Sex-determination' was written I had not seen Silvestri's latest communication. In a brief, preliminary paper[1] he presents the results of his studies on the early stages of the development of *Encyrtus* and among other details notes the fact that, as in *Litomastix,* there is parthenogenetic development, unfertilized eggs always producing males, fertilized ones only females. The maturation and early segmentation stages studied are identical in the two types.

Wm. A. Riley

SPECIAL ARTICLES

POLARIZATION AND INTERFERENCE PHENOMENA WITH WHITE LIGHT

I have usually found great difficulty in endeavoring to explain the color phenomena obtained with white light in rotary polarization, in the behavior of thin plates with or without polarized light, and in interferences and diffractions generally, to an elementary class. The following diagram, therefore, which yields a large amount of information, may be of interest to the reader, although it contains nothing essentially novel. Note the occurrence of d/λ throughout.

Rotary Polarization.—If we write the rotation θ of the plane of polarization due to a thickness d of quartz cut perpendicularly to the axis,

$$\theta = \pi(1 - v'/v'') \cdot d/\lambda',$$

where v' and v'' are the velocities of right-handed and left-handed rays in the crystal

[1] Silvestri, F., 1906, 'Sviluppo dell *Ageniaspis* (*Encyrtus*) *fuscicollis* (Dalm.) Thoms.,' *Atti Acc. Lincei* (5), XV., pp. 650–658.